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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/298,297	04/23/1999	DUNCAN W. MCBRANCH	S-91723	1892

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EXAMINER	
MARKHAM, WESLEY D	
ART UNIT	**PAPER NUMBER**
1762	

DATE MAILED: 12/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/298,297	MCBRANCH, DUNCAN W.	
	Examiner	Art Unit	
	Wesley D Markham	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 April 1999* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *8/30/1999*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claims 1 – 26 are currently pending in U.S. Application Serial No. 09/298,297, and an Office Action on the merits follows.

Information Disclosure Statement

1. The IDS filed by the applicant on 8/30/1999 is acknowledged, and the references listed thereon have been considered by the examiner as indicated on the attached copy of the PTO-1449 form.

Drawings

2. The six (6) sheets of formal drawings filed by the applicant on 4/23/1999 are acknowledged and approved by the examiner.

Specification

3. Applicant is reminded of the proper language and format for an abstract of the disclosure. The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. Additionally, the abstract is objected to because the phrase, "using poly(propylene-imine) (PPV)" in line 10 appears to contain a typographical error (i.e., because PPV is not the abbreviation for poly(propylene-imine) – PPI is).

Claim Objections

4. Claims 20 and 21 are objected to because of the following informalities: The phrase, "which exhibit charge transfer..." in the preamble of each of the aforementioned claims appears to contain a typographical error and should read, "which exhibit energy transfer..." in order to correspond to Claims 19 and 14 (from which Claims 20 and 21 depend). Appropriate correction is required.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 25 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
7. **Claim 25** (from which **Claim 26** depends) recites the limitation "the nonlinear optical material" in line 3 of the claim. There is insufficient antecedent basis for this limitation in the claim. Specifically, Claim 14 (from which Claim 25 depends) refers to a donor layer, a transparent spacer layer, and an acceptor layer, but does not recite or imply a "nonlinear optical material" of any sort. Therefore, it is unclear what "the nonlinear optical material" in Claims 25 and 26 refers to, and the scope of the claims is vague and indefinite. For the purposes of examination only, the examiner has

reasonably interpreted "the nonlinear optical material" in Claims 25 and 26 to be "the transparent spacer layer" in order to correspond to independent Claim 14.

Claim Observations

8. The examiner notes that the term, "include(s)" used throughout the claims of the instant application has been reasonably interpreted to be equivalent to, "comprise(s)" (i.e., to be "open" language).

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1, 9, 14, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Toshiba (EP 0 482 920 A2).

11. Regarding independent **Claim 1**, Toshiba teaches a method for generating materials which exhibit photoinduced charge transfer having a controlled direction (i.e., from the donor layer to the acceptor layer) (Abstract, page 3, lines 18 – 22, page 5, lines 31 – 37), the method comprising the steps of depositing a donor layer "D" onto a substrate "1" (Figure 50; page 4, lines 47 – 58, page 5, lines 1 and 20 – 24, page 22, lines 21 – 58, page 23, lines 1 – 54), depositing a nonlinear optical (NLO) material

"O S O" onto the donor layer (Figure 50; page 7, lines 40 – 47, page 22, lines 21 – 58, page 23, lines 1 – 54), and depositing an acceptor layer "A" onto the nonlinear optical material (Figure 50, page 5, lines 2 – 8, page 22, lines 21 – 58, page 23, lines 1 – 54), whereby photoinduced charge transfer is achieved between the donor layer and the acceptor layer (Abstract, page 3, lines 18 – 22, page 5, lines 31 – 37). Please note that the deposition cycle of acceptor layer "4", nonlinear optical layer "19", and donor layer "6" is repeated 100 times (Figure 50). As such, any one of the lower donor layers (e.g., cycle 1, cycle 2, etc.) of Toshiba is deposited "onto a substrate", as required by the claims; any one of the middle NLO layers (e.g., cycle 5, cycle 6, etc.) is deposited "onto the donor layer", as required by the claims; and any one of the upper acceptor layers (e.g., cycle 8, cycle 9, etc.) is deposited "onto the NLO layer", as required by the claims. Toshiba does not explicitly teach that the method enhances the NLO properties of the NLO material. However, the process of Toshiba is the same as the applicant's claimed process, and the resulting product of Toshiba (i.e., an NLO material layer sandwiched between a donor layer and an acceptor layer) is the same as the product resulting from the applicant's claimed process. As such, unless essential process limitations are missing from the applicant's claims, the process of Toshiba would have inherently enhanced the NLO properties of the NLO material, as required by the claims. Regarding **Claim 9**, Toshiba also teaches that the substrate includes glass (page 22, line 23).

12. Regarding independent **Claim 14**, Toshiba teaches a method for generating materials which exhibit photoinduced energy transfer having a controlled direction

(i.e., from the donor layer to the acceptor layer) (Abstract, page 3, lines 18 – 22, page 5, lines 31 – 37), the method comprising the steps of depositing a donor layer "D" onto a substrate "1" (Figures 10 and 11; page 4, lines 47 – 58, page 5, lines 1 and 20 – 24, page 10, lines 55 – 58, page 11, lines 1 – 55); depositing a transparent spacer layer "7" onto the donor layer (Figures 10 and 11; page 4, lines 51 – 53, page 5, lines 25 – 30, page 10, lines 55 – 58, page 11, lines 1 – 55); and depositing an acceptor layer "A" onto the transparent spacer layer (Figures 10 and 11, page 5, lines 2 – 8, page 10, lines 55 – 58, page 11, lines 1 – 55), whereby energy transfer is achieved between the donor layer and the acceptor layer (Abstract, page 3, lines 18 – 22, page 5, lines 31 – 37). Regarding **Claim 24**, Toshiba also teaches that the substrate includes glass (page 10, line 55; page 11, line 45).

13. Claims 14, 15, and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Schrepp et al. (USPN 5,294,402).

14. Regarding independent **Claim 14**, Schrepp et al. teaches a method for generating materials which exhibit energy transfer having a controlled direction (Col.3, lines 10 – 39), which comprises the steps of depositing a donor layer "D" onto a substrate "S", depositing an intermediate layer "Z" consisting of, for example, long-chain alcohols, carboxylic acids, esters, amines, or inert organic polymers having a total thickness of as little as 20 Angstroms (i.e., "a transparent spacer layer") onto the donor layer, and depositing an acceptor layer "A" onto the intermediate layer, whereby energy transfer is achieved between the donor layer and the acceptor layer

(Abstract, Figure 5, Col.1, lines 60 – 68, Col.2, lines 1 – 50, Col.3, lines 3 – 39, and Cols. 5 – 8 (for the donor layer), and Cols. 8 – 10 (for the acceptor layer)).

Regarding **Claim 15**, Schrepp et al. also teaches that the donor is a "conjugated polymer" (Col.6, lines 49 – 53, Col.8, lines 1 – 6), and the acceptor layer is a "porphyrin" (Col.10, lines 1 – 39). Regarding **Claim 24**, Schrepp et al. also teaches that the substrate includes glass (Col.5, lines 4 – 13).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oldenburg et al. (USPN 6,344,272) in view of Thompson (USPN 6,107,561).

17. Regarding independent **Claim 1**, Oldenburg et al. teaches a method for generating materials which exhibit photoinduced charge transfer having a controlled direction, the method comprising using a sequential deposition method to produce a layer of metal nanoshells (i.e., an NLO material – see Col.1, lines 48 – 56, Col.3, lines 13 – 45, Col.5, lines 59 – 60) sandwiched between a donor layer, such as a PPV layer, and an acceptor layer, such as a C_{60} layer, whereby photoinduced charge transfer is achieved between the donor layer and the acceptor layer (Col.14, lines 28 – 59).

Oldenburg et al. does not explicitly teach the order of steps claimed by the applicant (i.e., donor layer on substrate, NLO material on donor layer, and acceptor layer on NLO material). Specifically, Oldenburg et al. is silent regarding the order in which the donor layer and the acceptor layer are deposited. Thompson teaches that, in the art of producing a multilayer thin film for a solar cell in which charge transfer is achieved between a donor layer and an acceptor layer (i.e., a process analogous to that of Oldenburg et al.), the order of the layers (i.e., substrate-donor-acceptor, or substrate-acceptor-donor) determines the direction of current flow (Abstract, Col.3, lines 1 – 3, Col.11, lines 19 – 45). As such, it would have been obvious to one of ordinary skill in the art to either (1) deposit the layers of Oldenburg et al. in the order claimed by the applicant (i.e., donor layer on substrate, NLO material on donor layer, and acceptor layer on NLO material), or (2) deposit the layers of Oldenburg et al. in the order opposite to that claimed by the applicant (i.e., acceptor layer on substrate, NLO material on acceptor layer, and donor layer on NLO material), depending on the direction of current flow (i.e., charge transfer) desired by the purveyor in the art. In other words, since Thompson teaches that the order of the layers determines the direction of current flow (i.e., the order of the layers is a result / effective variable), one of ordinary skill in the art would have reasonably been expected to optimize the order of the layers based on whether the resulting device requires current flowing toward the substrate or away from the substrate. In either situation, the layer of metal nanoshells (i.e., the NLO material) would be between the donor layer and acceptor layer, thereby conforming to the structural goal set forth by Oldenburg et al.

The combination of Oldenburg et al. and Thompson does not explicitly teach that the method enhances the NLO properties of the NLO material. However, the process of the combination of Oldenburg et al. and Thompson is the same as the applicant's claimed process, and the resulting product (i.e., an NLO material layer sandwiched between a donor layer and an acceptor layer) is the same as the product resulting from the applicant's claimed process. As such, unless essential process limitations are missing from the applicant's claims, the process of the combination of Oldenburg et al. and Thompson would have inherently enhanced the NLO properties of the NLO material, as required by the claims. Regarding **Claim 2**, Oldenburg et al. also teaches that the donor layer is PPV (i.e., a "conjugated polymer") and the acceptor layer is C_{60} (i.e., a "fullerene") (Col.14, lines 33 – 59).

18. Claims 1 – 3, 5 – 16, and 18 – 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiba in view of Thompson (USPN 6,107,561), and in further view of Roberts et al. (US H2046 H), Lvov et al. ("Non-linear optical effects in layer-by-layer alternate films of polycations and an azobenzene-containing polyanion", 1997), McBranch et al. (USPN 5,741,442), and Yu et al. (USPN 6,441,395 B1).

19. As an alternative (or in addition to) to the reasoning set forth above in paragraphs 11 and 12, Toshiba teaches all the limitations of **Claims 1 – 3 and 14 – 16**, except for a method wherein the layers are deposited in the order claimed by the applicant (i.e., donor layer on substrate, NLO material and/or transparent spacer layer on donor layer, and acceptor layer on NLO material and/or transparent spacer layer), wherein

the donor layer and acceptor layer are selected from the group consisting of conjugated polymers, fullerenes, porphyrins, and phthalocyanines, and wherein the conjugated polymers include conjugated polyelectrolytes. Specifically, Toshiba teaches that the layers (donor, acceptor, NLO, and spacer layers) are deposited using a Langmuir-Blodgett (LB) technique (page 5, lines 20 – 30). Thompson teaches that, in the art of producing a multilayer thin film in which charge transfer is achieved between a donor layer and an acceptor layer (i.e., a process analogous to that of Toshiba), the order of the layers (i.e., substrate-donor-acceptor, or substrate-acceptor-donor) determines the direction of current flow (Abstract, Col.3, lines 1 – 3, Col.11, lines 19 – 45). As such, it would have been obvious to one of ordinary skill in the art to either (1) deposit the layers of Toshiba in the order claimed by the applicant (i.e., donor layer on substrate, NLO material or transparent spacer layer on donor layer, and acceptor layer on NLO material or transparent spacer layer), or (2) deposit the layers of Toshiba in the order opposite to that claimed by the applicant (i.e., acceptor layer on substrate, NLO material or transparent spacer layer on acceptor layer, and donor layer on NLO material or transparent spacer layer), depending on the direction of current flow (i.e., charge transfer) desired by the purveyor in the art. In other words, since Thompson teaches that the order of the layers determines the direction of current flow (i.e., the order of the layers is a result / effective variable), one of ordinary skill in the art would have reasonably been expected to optimize the order of the layers based on whether the resulting device requires current flowing toward the substrate or away from the substrate.

Additionally, Roberts et al. teaches that, in the art of producing NLO material based multilayer films, alternating polyelectrolyte deposition (APD) is preferable to a LB technique because (1) it allows many more substrates to be coated simultaneously in an automated process in comparison to an LB process, and (2) it eliminates the need for large bulky hydrophobic groups usually required by LB processing (Abstract, Col.4, lines 24 – 35 and 62 – 65, Col.5, lines 39 – 53, and Col.11, lines 5 – 19). Therefore, it would have been obvious to one of ordinary skill in the art to utilize APD to deposit the multilayer films of the combination of Toshiba and Thompson, as opposed to LB deposition (as taught by Toshiba), with the reasonable expectation of successfully and advantageously reaping the benefits of APD taught by Roberts et al., such as allowing many more substrates to be coated simultaneously in an automated process in comparison to an LB process, and eliminating the need for large bulky hydrophobic groups usually required by LB processing. In doing so, one of ordinary skill in the art would have reasonably been expected to utilize materials known in the art to function in the manner desired by Toshiba (i.e., as donor layers, acceptor layers, NLO material layers, and transparent spacer layers) and capable of being deposited by a solution-based technique such as APD so as to successfully and advantageously produce the multilayer films(s) desired by Toshiba. Such materials are taught by Roberts et al. (Cols. 5 – 10, which describe various NLO-active polycations and polyanions, as well as various NLO-inactive polycations and polyanions that are capable of being used as transparent buffer layers), Lvov et al. (Abstract, pages 107 – 109 and 111, which describe PAZO as an NLO-active

sidechain polyelectrolyte, as well as various other conjugated polyelectrolytes), McBranch et al. (Cols.1 – 6, which describe soluble functionalized derivatives of C_{60} suitable for use as a charge / electron acceptor material), and Yu et al. (Cols. 8 – 9, which describe various conjugated polymers suitable for use as donor layers, and functionalized derivatives of C_{60} suitable for use as acceptor layers), and include fullerenes and conjugated polymers / polyelectrolytes, as claimed by the applicant. The aforementioned combination of references also teaches that the fullerenes include functionalized derivates of C_{60} having ionic groups such that the fullerenes are rendered water-soluble (**Claims 5 and 18**) (Cols.1 – 6 of McBranch et al.); the substrate includes glass (**Claims 9 and 24**) (see the Examples of Toshiba); and the donor layer, acceptor layer, NLO material layer, and transparent spacer layer are deposited by using ion-self assembly from aqueous solution (i.e., APD, as taught by Roberts et al. – see the discussion of Claims 1 – 3 and 14 – 16 above) (**Claims 10 and 25**). Regarding **Claims 6 and 7**, Roberts et al. also teaches that it is desirable to deposit various NLO-inactive polyelectrolyte buffer layers (i.e., "transparent spacer layers") throughout the thickness of the multilayer film in order to smooth the polycation or polyanion films (i.e., the NLO-active films), create a fresh surface, modify the refractive index, etc. (Col.10, lines 33 – 51). Therefore, it would have been obvious to one of ordinary skill in the art to deposit such transparent spacer layers at any point throughout the thickness of the film, including "between neighboring donor and acceptor layers" (as claimed by the applicant) with the reasonable expectation of reaping the benefits of depositing such buffer layers, such

as smoothing the films, creating a fresh surface for deposition, modifying the refractive index, etc. By doing so, the structure of the multilayer film taught by the prior art would be the same as the structure of the film claimed by the applicant, and as such, "self-quenching" would have inherently been eliminated, as required by Claim 6. Regarding **Claim 8**, Roberts et al. also teaches that the polyelectrolyte buffer layer is, for example, PSS (Col.7, lines 64 – 67). Regarding **Claims 19 and 22**, Roberts et al. also teaches that it is desirable to deposit various NLO-inactive polyelectrolyte buffer layers (i.e., "transparent spacer layers") throughout the thickness of the multilayer film in order to smooth the polycation or polyanion films (i.e., the NLO-active films), create a fresh surface, modify the refractive index, etc. (Col.10, lines 33 – 51). Therefore, it would have been obvious to one of ordinary skill in the art to deposit such transparent spacer layers at any point throughout the thickness of the film, including between the NLO material layer(s) and the acceptor layer(s) (as claimed by the applicant) with the reasonable expectation of reaping the benefits of depositing such buffer layers, such as smoothing the films, creating a fresh surface for deposition, modifying the refractive index, etc. Regarding **Claim 23**, Roberts et al. also teaches that the polyelectrolyte buffer layer (i.e., transparent spacer layer) is, for example, PSS (Col.7, lines 64 – 67). Regarding **Claims 12, 13, 20, and 21**, the combination of references also teaches that the NLO-material includes polymers having NLO chromophores as side chain substituents to the polymer backbone, specifically PAZO (Abstract, pages 107 – 109 of Lvov et al.). Regarding **Claims 11 and 26**, the combination of references does not explicitly

teach that the conformation of the donor layer is controlled by varying the pH of the aqueous deposition solution. However, Roberts et al. teaches that, in the art of depositing a film by APD, the polycation and polyanion solutions are preferably water based and are controlled to have a pH within a specific range (Col.9, lines 48 – 60). Therefore, it would have been obvious to one of ordinary skill in the art to control the pH in the APD process of the aforementioned combination of references (i.e., during the deposition of the donor layer, acceptor layer, NLO material layer, and transparent spacer layer) in order to insure that the APD is successfully carried out. By controlling the solution pH during deposition, the conformation of the donor layer would have inherently been "controlled by varying the pH", as claimed by the applicant.

20. Claims 4 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toshiba in view of Thompson (USPN 6,107,561), in further view of Roberts et al. (US H2046 H), Lvov et al. ("Non-linear optical effects in layer-by-layer alternate films of polycations and an azobenzene-containing polyanion", 1997), McBranch et al. (USPN 5,741,442), and Yu et al. (USPN 6,441,395 B1), in further view of Jacobson et al. (USPN 6,445,489 B1).

21. The combination of Toshiba, Thompson, Roberts, Lvov, McBranch, and Yu teaches all the limitations of **Claims 4 and 17** as set forth above in paragraph 19, except for a method wherein the conjugated polymers include the water-soluble, anionic form of MPS-PPV. However, Roberts et al. teaches that the APD process should be

carried out by using the water-soluble, polyelectrolyte (anionic or cationic) form of various polymers (Cols. 5 – 9), and Yu et al. teaches that PPV or a PPV derivative is suitable for use as a donor layer in a multilayer donor / acceptor structure (Cols. 8 – 9). Jacobson et al. teaches that MPS-PPV was a well-known derivative of PPV at the time of the applicant's invention (Col.5, lines 66 – 67, Col.6, lines 1 – 7). Therefore, it would have been obvious to one of ordinary skill in the art to utilize the water-soluble, polyelectrolyte (anionic or cationic) form of a PPV-derivative such as MPS-PPV as the donor layer in the process of the combination of Toshiba, Thompson, Roberts, Lvov, McBranch, and Yu with the reasonable expectation of (1) success, as Yu et al. teaches that PPV derivatives in general are suitable as donor layers in a multilayer donor / acceptor structure, and (2) obtaining similar results (i.e., charge / energy donation by the donor layer), regardless of the specific PPV-derivative used for the donor layer.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Wang et al. (USPN 6,106,948) teaches a method of producing multilayer nonlinear optical films by using ionic self-assembly from aqueous solution (e.g., alternating deposition of polyanions and polycations). Hollins et al. (USPN 5,882,785) teaches a method of producing multilayer nonlinear optical films by using a LB film deposition technique.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wesley D Markham whose telephone number is (571) 272-1422. The examiner can normally be reached on Monday - Friday, 8:00 AM to 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Wesley D Markham
Examiner
Art Unit 1762

WDM

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